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PRELIMINARY PARKING DEMAND ANALYSIS

Submitted to

YBC Public Facilities Subcommittee

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Preliminary parking  
demand analysis,  
1976.

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OFFICE DEVELOPMENT

Summary

Parking demand for office use is equivalent to approximately 1.3 spaces per 1000 gross square feet. As currently planned, Central Blocks office development could produce a demand for 2,957 long-term spaces; total YBC office development could produce a demand for 9,360 long-term spaces. Approximately 2,324 spaces are now used within the YBC project area for all day parking. As currently planned, 1,841 long-term spaces would be provided within the project area. Whereas City policy calls for accomodation of long-term parking south of Folsom only, current parking availability south of Folsom (within walking distance to the project area) equals roughly 1,630 spaces. If no additional parking is provided as part of the YBC development scheme, an estimated 8,213 parking space shortfall could occur. Much of this demand could be absorbed by increased transit usage, assuming improvements in existing transit service and capacities. Lack of available parking could force people into transit; location of office uses near existing transit, or provision of transit accessability (people mover, etc.), could further reduce parking demand, as could a reduced office development scheme.

Methodology of Analysis

For the purposes of this analysis, parking demand was determined by projecting geographic distribution and modal split of trips of employees working within the YBC project area. Much of this data has already been provided in the YBC EIR of May 1973. Certain adjustments were made to update projections. A figure of 5 employees per 1,000 gross square foot (GSF) of office was used to determine density. Table A shows geographic distribution and modal split used in making calculations.

TABLE A

Distribution of Movements by Origin-Destination and Mode of Travel

<u>Geographic Area</u>	<u>Percent of Person Movements</u>	<u>Auto Use as Percent of Total Mode</u>
North Bay	7.7%	47%
Peninsula	17.2	59
East Bay	13.0	24
San Francisco	62.1	29

Source: 1970 UTP Package Journey-to-Work  
Developed by MTC - October 1975



Projected Parking Demand

By extrapolating data as shown in Table A, parking demand generated can be determined, as shown in Table B.

TABLE B

## Parking Demand Generated

<u>Geographic Area</u>	<u>No. of Employees per 1,000 GSF</u>	<u>Person-Trips by Car per 1,000 GSF</u>	<u>No. of Cars per 1,000 GSF*</u>
North Bay	.38	.18	.13
Peninsula	.86	.51	.38
East Bay	.65	.16	.12
San Francisco	<u>3.11</u>	<u>.90</u>	<u>.67</u>
Total	5.0-0	1.75	1.30

\*Vehicle Occupancy Rate = 1.35

As noted, Central Blocks office development (2,275,000 sq. ft.) would produce a demand for 2,957 all-day spaces; whereas total office development planned (7,200,000 sq. ft.) would produce a demand for 9,360 -- all day spaces.

Certain factors may, however, alter modal splits, thereby altering parking demand. Although modal splits used in this analysis generously reflect projected transit usage by the year 1990, transit capacity increases could increase ridership. For example, Peninsula transit access is currently under study by MTC, possibly resulting in implementation of some form of rapid transit system in that corridor within 20 years.

Other factors influencing modal splits include proximity of office use to existing transit, and lack of available parking. Since the bulk of city and regional transit is concentrated near Market and Mission Streets, office locations toward the northern end of the YBC project area could produce less parking demand.

Availability of Parking

Parking inventory and usage was recently surveyed as part of the report Parking in San Francisco (DCP/DPW - December 1975), and is shown on Maps 3, 4, and 6 (attached). As shown, current parking availability south of Folsom, not within the YBC project area, and in an area bounded by 1st, Brannan, 6th, Folsom, equals approximately 1,630 spaces. The average all day rate in this area currently attracts long-term parking. However, proposed policies developed







for Parking in San Francisco call for no new parking of any kind in the downtown "core" area (C-3 districts except C-3-S); new short-term parking in the C-3-S district only; and new long-term parking provided only in areas peripheral to the C-3-S district (south of Folsom).

### Analysis

There is not sufficient parking currently available in the surrounding area (south of Folsom) to meet projected demand if the total office development as currently planned is constructed. A 9,360 space demand is projected for the total office development scenario. 1,841 spaces are proposed to be provided within some of the office buildings to serve long-term parking. This reduces YBC generated demand to 7,519 spaces. 2,423 spaces are currently utilized by long-term parkers within the YBC project area. When added to the unmet projected demand, this produces a new demand for 9,843 spaces. Available parking south of Folsom, not within the project area, and within walking distance of the project area, equals roughly 1,630 spaces. Therefore, an 8,213 parking space shortfall would occur if the total development was built as currently planned.

Much of the unmet demand could be accommodated by transit, assuming that lack of available parking within walking distance became a deterrent to driving to work; and that transit service increases were implemented. Just as likely, however, is that long-term parking would proliferate south of Folsom to absorb much of the shortfall.

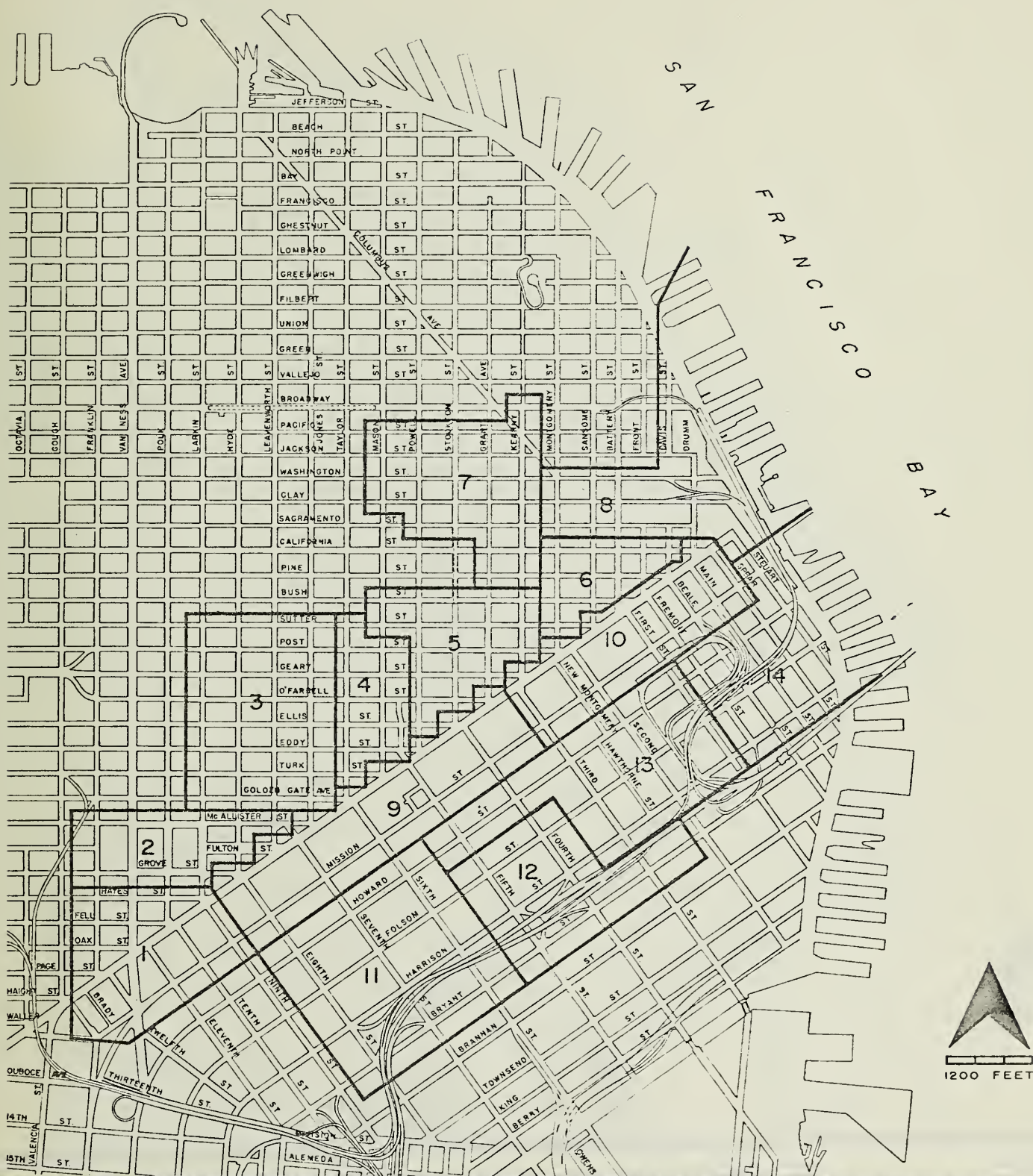
### Conclusions

Different combinations of office development scenarios and planned parking would produce different parking demands. Obviously, a reduced office development scheme would mitigate some of the parking problems. Major components to be considered in evaluating effects of office development on parking demand are proximity and accessibility to transit; an average projected ratio of 1.3 spaces per 1,000 GSF without further transit service increases; and San Francisco policy on parking in this area.



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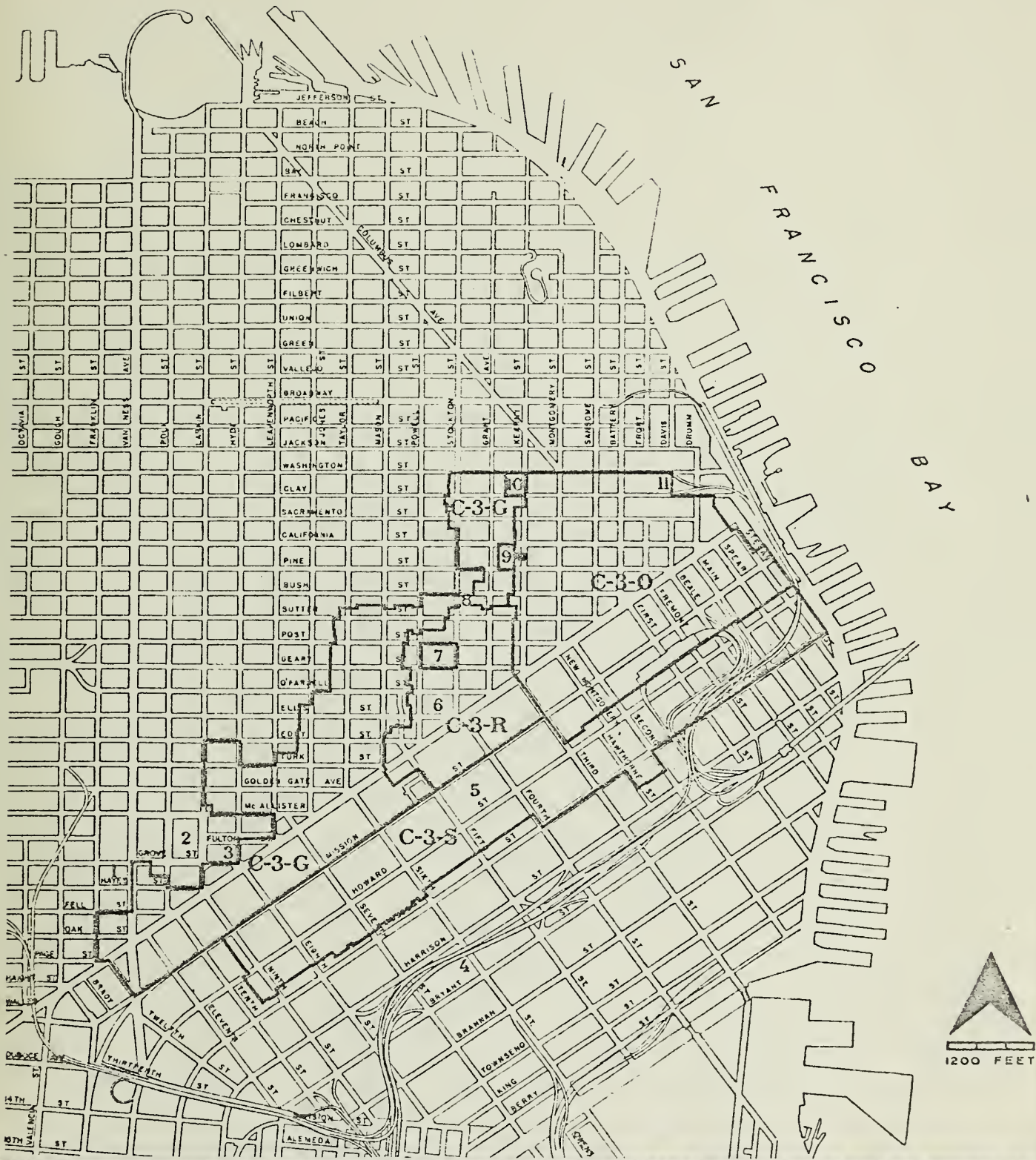
1965 AND 1975 DOWNTOWN OFF-STREET PARKING SPACE INVENTORY BY AREA

Map 3

AREA	1965 Supply	1975 Supply	AREA	1965 Supply	1975 Supply
1	1983	2617	8	3366	7657
2	1563	1621	9	5531	5400
3	3053	3978	10	4095	4636
4	3835	5264	11	2350	2691
5	3669	5394	12	1645	2266
6	1348	1857	13	5535	6700
7	2829	4246	14	2899	4417
			TOTAL	43,701	53,744







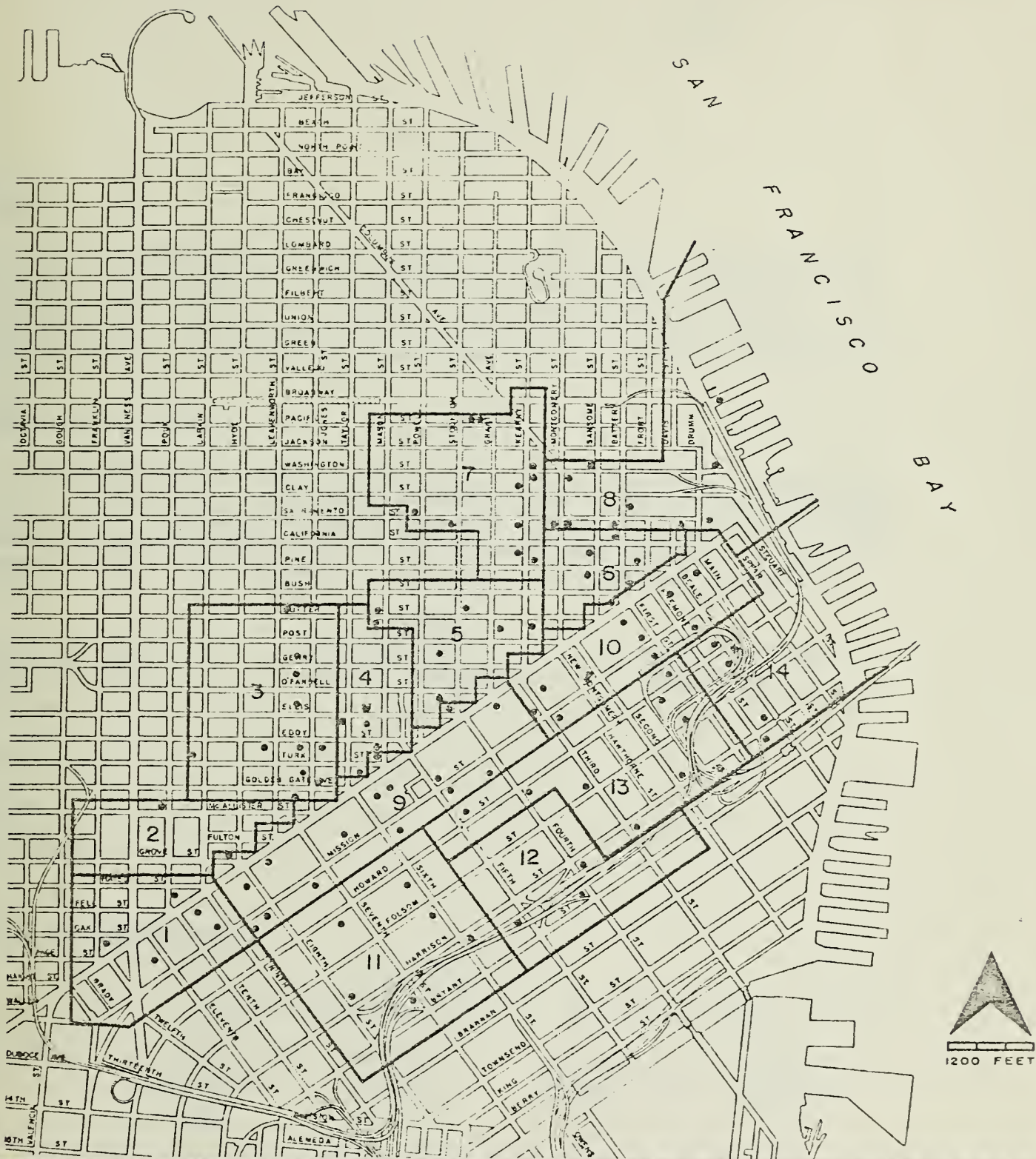
### C-3 ZONING DISTRICTS AND PARKING AUTHORITY GARAGES AND LOTS

1. Civic Center Auto Park	225 Stalls	7. Union Square Garage	1081 Stalls
2. Civic Center Plaza Garage	840 Stalls	8. Sutter-Stockton Garage	870 Stalls
3. Marshall Square Parking Plaza	111 Stalls	(500 spaces being added)	
4. Seventh & Harrison Parking Plaza	270 Stalls	9. St Mary's Square Garage	828 Stalls
5. Fifth & Mission Garage	1788 Stalls	10. Portsmouth Square Garage	504 Stalls
6. Ellis-O'Farrell Garage	900 Stalls	11. Golden Gateway Garage	981 Stalls

Map 4







# DOWNTOWN OFF-STREET PARKING FACILITIES: AVERAGE RATES & OCCUPANCY

Map 6

AREA	2 Hour Rate (Av)	All Day (Av)	Average % Occupied	AREA	2 Hour Rate (Av)	All Day (Av)	Average % Occupied	● Sampled Location
1	\$1.44	\$2.22	75%	8	\$2.93	\$4.24	90%	
2	1.25	2.35	90%	9	1.25	1.85	84%	
3	1.59	2.01	78%	10	2.32	3.21	80%	
4	2.01	3.35	90%	11		.71	72%	
5	1.57	3.23	99%	12		.50	46%	
6	2.80	4.03	102%	13		1.13	73%	
7	2.08	3.51	86%	14		1.35	83%	

Note: Occupancy refers to PUBLIC facilities only.  
Sampling of Lots and Garages Done Between 1 PM and 2 PM, June - September 1975 by the Departments of Public Works and City Planning





## SPORTS ARENA

Summary

Parking demand for average attendance (7,700) Sports Arena events is estimated at 1,873 spaces. For a maximum attendance event (19,500), parking demand would increase to 4,626 spaces. Given that Sports Arena events primarily occur at night, an adequate parking reservoir among existing spaces in the area would be available to serve the Arena, irrespective of the Arena's location.

Methodology of Analysis

Geographic distribution, modal split of trips, and auto occupancy rate of users of the Arena, as developed in the YBC EIR of May 1973, was employed to determine auto trip generation. This data appears to have been adequately prepared, and at this time there is little significant reason to adjust these figures. Table C shows geographic distribution and modal split of trips:

<u>Geographic Area</u>	TABLE C	
	<u>Percent of Person Movements</u>	<u>Percent of Person Trips by Auto</u>
North Bay	3%	90%
Peninsula	13	80
East Bay	12	90
San Francisco	72	70

Parking Demand Generated

<u>Geographic Area</u>	TABLE D			
	Average Attendance		Maximum Attendance	
	<u>Person-Trips by Car</u>	<u>Number of Cars*</u>	<u>Person-Trips by Car</u>	<u>Number of Cars*</u>
North Bay	208	69	527	176
Peninsula	801	267	2,028	676
East Bay	832	277	2,106	702
San Francisco	<u>3,781</u>	<u>1,260</u>	<u>9,215</u>	<u>3,072</u>
Total	5,622	1,873	13,876	4,626

\* Auto Occupancy Rate = 3.0



### Availability of Parking

Given that Sports Arena events occur at night, it can be assumed that virtually all of the existing parking spaces in the area would be available at night. Two Arena locations were analyzed for parking availability. With the Arena located in the block bounded by 3rd, 4th, Folsom, and Harrison Streets (current YBC plan), 8,051 public off-street spaces would be available within walking distance (120-20 Ft.) of the Arena in an area bounded by 2nd, 5th, Bryant, and Howard Streets. This inventory includes the 600 space Apparel Mart garage, and does not include spaces currently existing within the YBC project area. With the Arena located toward the northern end of the project area, in the block bounded by 3rd, 4th, Mission and Howard Streets, 4,927 public off-street spaces would be available within a 1,200 foot radius in an area bounded by 2nd, 5th, Market and Folsom Streets. This inventory includes the 1,788 space 5th and Mission garage, the Apparel Mart garage, and does not include spaces currently existing within the YBC project area.

### Analysis

Were the Arena to be located toward the northern end of the project, both average and maximum attendance event parking demand could be accommodated within the existing inventory. Accommodation of maximum demand would still produce a surplus supply of 301 spaces available to serve other nighttime events in the area. Location of the Arena near Market and Mission Streets could reduce parking demand, due to user accessibility to existing transit. Were the Arena to be located toward the southern end of the project, accommodation of generated demand would be even simpler, given that fewer external demands on the supply would occur. A minimum surplus of 3,425 spaces could absorb a higher demand if auto use was increased due to lack of accessibility to existing transit.

### Conclusions

No new parking would be required to serve the Sports Arena, in either of two Central Blocks locations. Location near transit, and/or provision of access to transit (shuttle system etc.) could reduce parking demand. Adequate lighting and/or security might be required to ease walking from available parking to site.



## CONVENTION CENTER/EXHIBIT HALL COMPLEX

Summary

A Convention Center/Exhibit Hall complex as currently planned (652,158 sq. ft.) would generate two distinctive types of events. A convention drawing from a national market may use the entire facility, and could generate a maximum parking space demand of 1,584 spaces. Events held in the Exhibit Hall draw from a regional market and could produce a maximum demand of 5,375 parking spaces during a weekday, and 7,430 spaces during nights and weekends. Weekday Exhibit Hall maximum attendance events generate a demand exceeding the surrounding public off-street inventory available by 3,317 spaces. All other types of events for the complex generate a demand which can be accommodated by existing parking available within a radius of 1,200 - 1,400 feet. The maximum number of days during the year when demand could exceed supply is estimated at no more than thirty.

Methodology of Analysis

Convention and Exhibit Hall trip generation rates developed in the YBC EIR of May 1973 were used as a guideline for this analysis. Certain adjustments to the data were made to reflect a higher probable transit ridership to the complex. Convention and Exhibit Hall events were analyzed separately to determine highest possible parking demand attributable to any one particular event. It was assumed that a convention might use the Exhibit Hall, but that two events for each facility would not be held concurrently, that is, that a convention and boat show would not be held at the same time. Both types of event were expected to generate both night and day parking demand.

Convention geographic distribution and modal split of trips are shown in Table E.

TABLE E

<u>Geographic Area</u>	<u>Percent of Personal Movements</u>	<u>Percent of Person-Trips by Auto</u>
Peninsula	10%	50%
East Bay	10	50
San Francisco	80	10





Exhibit Hall types of events particularly can be expected to generate both daytime and nighttime parking demand. It was assumed that daytime transit ridership would be higher than at night, due to the greater availability of transit. The modal split for nighttime use as developed in the EIR was used for this analysis. Projected daytime modal splits are rough estimates for the purpose of comparison only. Table F shows geographic and modal split of trips for Exhibit Hall types of events.

TABLE F

<u>Geographic Area</u>	<u>Percent of Person Movements</u>	<u>Percent of Person-Trips by Auto</u>	
		Day	Night
North Bay	3%	70%	90%
Peninsula	13	65	80
East Bay	12	60	90
San Francisco	72	50	70

#### Parking Demand Generated

Convention and Exhibit Hall event parking demand were analyzed separately, as shown in the following tables.

TABLE G

#### Convention Events Day or Night Demand

<u>Geographic Area</u>	<u>Average Attendance (12,000)</u>		<u>Maximum Attendance (25,000)</u>	
	<u>Person-Trips by Car</u>	<u>No. of Cars*</u>	<u>Person-Trips by Car</u>	<u>No. of Cars*</u>
Peninsula	600	200	1,250	417
East Bay	600	200	1,250	417
San Francisco	<u>960</u>	<u>320</u>	<u>2,250</u>	<u>750</u>
Total	2,160	720	4,750	1,584

\* Auto Occupancy Rate = 3.0



TABLE H

Exhibit Hall Events  
Daytime (9a.m.-6p.m.) Demand

Geographic Area	Average Attendance (10,000)		Maximum Attendance (30,000)	
	Person-Trips by Car	No. of Cars*	Person-Trips by Car	No. of Cars*
North Bay	210	70	630	210
Peninsula	845	282	2,535	845
East Bay	720	240	2,160	720
San Francisco	<u>3,600</u>	<u>1,200</u>	<u>10,800</u>	<u>3,600</u>
Total	5,375	1,792	16,125	5,375

TABLE J  
Nighttime (6p.m.-12m.) Demand

North Bay	270	90	810	270
Peninsula	1,040	347	3,120	1,040
East Bay	1,080	360	3,240	1,080
San Francisco	<u>5,040</u>	<u>1,680</u>	<u>15,120</u>	<u>5,040</u>
Total	7,430	2,477	22,290	7,430

Auto Occupancy Rate = 3.0

Availability of Parking

It was assumed that the Convention Center complex would be located in the Central Block bounded by 3rd, 4th, Howard, and Folsom Streets, as currently planned. Walking distance to the site (1,200-1,400 ft.) was defined as an area bounded by Market, Bryant, Essex, and Mint Streets. Public off-street parking in this area (not including parking within YBC project area) available at 2 p.m. is estimated at 2,058 spaces. Parking available on nights and weekends is estimated at 7,656 spaces.



### Analysis

Conventions generally draw from a national market, with an average of 90% of participants arriving by plane. 80% of participants would stay in the Downtown/Northeast area of San Francisco. Those renting a car at the Airport would generally leave cars at their hotel and take transit to YBC. What parking demand does exist derives from those staying outside the immediate area and needing to drive to the convention. Average attendance convention events generate a demand for 720 spaces, whereas a maximum attendance convention generates a 1,584 parking space demand. The existing daytime inventory of 2,058 spaces in the surrounding area can accommodate average and maximum demand, assuming that this demand is generally short-term in nature and could be located north of Folsom St. At night, convention demand can easily be accommodated within the existing inventory of 7,656 spaces.

Exhibit Hall events, i.e. boat show, public event, draw from throughout San Francisco and the region. Average attendance Exhibit Hall events generate a peak demand of 1,792 spaces during the day, which can be accommodated within the existing inventory, again assuming that the demand is generally short-term in nature. Maximum attendance events during the day generate a projected demand of 5,375 spaces, which cannot be accommodated within the existing weekday inventory. Average attendance events at night generate a peak demand for 2,477 spaces; maximum demand at night is estimated at 7,430 spaces. Both of these parking needs can be accommodated within the existing nighttime supply in the area of 7,656 spaces.

### Conclusion

According to these preliminary estimates, new parking is needed only to accommodate demand generated by a maximum attendance regional event held during the week. This is estimated to occur at the maximum of 30 days per year. Parking demand for Exhibit Hall events could fluctuate depending upon future availability and service levels of transit.

Were the Convention Center/Exhibit Hall complex and the Sports Arena to be built together, events occurring simultaneously would generate a parking demand far exceeding the existing available supply.

The provision of no new parking within YBC may preclude future use of existing lots in the area for other uses.









